

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 11-34 are presented for consideration. Claims 11, 14-16, 18, 28, 30 and 32-34 are independent. Claims 18 and 28 have been amended to clarify features of the subject invention, while claims 29-34 have been added to recite additional features of the subject invention. Support for these changes and claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant notes that the Examiner has made final the restriction requirement previously set forth. Claims 11-17, withdrawn from consideration, have been retained in this application in order to preserve Applicant's rights. Applicant requests that the Examiner his undersigned representative should it be necessary to cancel these claims in order to advance the subject application to issue.

Applicant requests favorable reconsideration and withdrawal of the objection and rejections set forth in the final Office Action dated October 31, 2003.

Claim 28 was objected to on formal grounds. Essentially, the Examiner noted that claim 28 was directed to an exposure method, but depended from apparatus claim 18. To expedite prosecution, Applicant has rewritten claim 28 in independent form. The Examiner will note that this claim is directed to a device manufacturing method that includes an exposing step utilizing an exposure apparatus, and a developing step. Applicant submits that these changes overcome the Examiner's objection. Such favorable indication is requested.

Claim 28 also was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner objected to a specific recitation in this claim. To expedite prosecution, Applicant has amended claim 28 in light of the Examiner's comments. In turn, Applicant also requests favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph.

Turning now to the art rejections, claim 18 was rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,244,923 to Komaba. Claims 18, 22, 23 and 28 were rejected under 35 U.S.C. § 103 as being unpatentable over the published U.S. patent application number 2002/0145711 to Magome et al. Claims 19-21 and 24-27 were rejected under 35 U.S.C. § 103 as being unpatentable over the Magome et al. publication in view of the published U.S. patent application number 2003/0020888 to Tanaka et al. Applicant submits that the cited, whether taken individually or in combination, does not teach many features of the present invention, as previously recited in claims 18-27. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that independent claim 18, for example, as presented, amplifies the distinctions between the present invention and the cited art.

Independent claim 18 recites an exposure apparatus that includes a projection optical system for projecting a pattern formed on a mask, onto an object to be exposed, which has a plurality of optical elements, wherein the projection optical system has a first space enclosed with two optical elements of the plurality of optical elements and filled with a helium gas, and a second space enclosed with two optical elements of the plurality of optical elements, and filled with a nitrogen gas. A pressure of the first space is higher than that of the second space.

The Komaba patent shows a balloon filled with a helium gas disposed in an atmosphere, namely, one that includes about eighty percent nitrogen gas.

The Magome et al. publication discloses an exposure apparatus that supplies a clean, dry air into the apparatus, a nitrogen gas into reticle and wafer spaces, and a helium gas into a lens barrel of a projection optical system. This publication suggests that a pressure of the nitrogen gas should be set to be higher than that of the clean, dry air, in order to prevent the air from flowing into a nitrogen purge space.

The Tanaka et al. publication discusses producing a pressure difference between two lens barrels of a projection optical system.

Applicant submits, however, that the cited documents fail to teach or suggest the salient features of the exposure apparatus of the present invention recited in independent claim 18, which includes a projection optical system for projecting a mask pattern onto an object, the projection optical system having a first space enclosed with two optical elements of a plurality of optical elements, and being filled with a helium gas, and a second space enclosed with two optical elements of the plurality of optical elements and being filled with a nitrogen gas, with the pressure of the first space being higher than that of the second space.

In addition, Applicant submits that the Magome et al. document suggests that a pressure of a space (filled with a nitrogen gas) enclosing a reticle stage be higher than that of the exposure apparatus (its space except for the light path being filled with the clean, dry air), which teaches away from the present invention recited in independent claim 18, in which different gases are supplied to different spaces inside the projection optical system under respectively different pressures.

For the reasons noted above, Applicant submits that the cited art, whether taken individually or in combination, does not teach many features of the present invention, as recited in independent claim 18.

For reasons similar to those discussed above with respect to independent claim 18, Applicant submits that independent claims 28, 30 and 32-34 patentably define features of the subject invention. Notably, the cited art is not read to teach or suggest at least the arrangement of the projection optical system of the present invention as utilized in the device manufacturing method and the exposure apparatus of the present invention recited in those claims. Therefore, the present invention recited in those independent claims likewise should be deemed allowable over the cited art, whether that art is taken individually or in combination.

For the reasons noted above, Applicant submits that the present invention, as recited in independent claims 18, 28, 30 and 32-34, is patentably defined over the cited art.

Dependent claims 19-27, 29 and 31 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action and an early notice of allowance are also requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven E. Warner", is written over a horizontal line.

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